

in nature these salts are withdrawn from the water, as the season advances, by the higher plants.

#### THE SPIROCHAETS.

In the Q. J. M. S., April, 1911, Dobell expresses the view that the organisms recently included under the term "Spirochaets" may properly be embraced in a single group for which he proposes the name Spirochaetoidea. Under this grouping he includes three genera, as follows:

1. *Spirochacta*,—free-living, aquatic spirochaets.
2. *Treponema*,—parasitic in various animals; e. g., the syphilis organism, the organism of relapsing fevers, etc.
3. *Cristispira*,—parasitic in the intestine and cystalline style of Lamellibranchs.

The author holds that the Spirochaetoidea, as thus constituted, should stand as a separate group of Protista—distinct from the Protozoa, the Bacteria, and the Cyanophyceae.

#### CYTOLOGY OF BACTERIA.

Dobell (Q. J. M. S., April, 1911) has an elaborate paper dealing critically with the cell-structure of bacteria. He makes the point that the most extended studies of bacteria have been made by bacteriologists, who are interested primarily in the diagnostic and ecological (physiological) qualities, and their technic has been elaborated with this in view rather than to display the cytological peculiarities. After a historical review of the sharp divergences of opinion due to the results of these methods, he gives an account of his own studies on numerous species of bacteria.

He concludes that bacteria are all nucleated cells, and that the nuclear matter may differ in different species and at different parts of the life-cycle of one species. These nuclei may be: (1) a system of distinct granules; (2) a filament; (3) larger dense mass of nuclear substance; (4) irregular branches or anastomosing strands; and